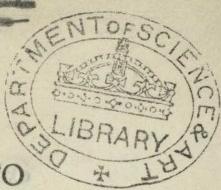


S & A Dept

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Navigation.

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REPORT ON THE SYSTEM OF AID TO  
NAVIGATION SCHOOLS.

Science and Art Department,  
24th January 1863.

Sir,

The introduction of the system of payments on results into all the educational departments, except the Navigation Schools, and its substitution in the place of the former systems of certificate allowance, etc., would appear to render a revision of the grants to Navigation Schools, in which the certificate system more or less still pertains, necessary. I have therefore carefully considered the whole subject, and as in many points I believe that not only the system of administration but the subjects of instruction aided may with great advantage be changed, I beg leave to submit the following suggestions for the consideration of My Lords.

The aid granted to all Navigation Schools, except three recently established, is governed by the Navigation Minute of July 1859, and the report made by Captain Ryder, R.N., and myself, in June 1860, and approved by My Lords. The few Schools recently established are under the Interpretation Minute of 6th December 1860, which though recognising a system of payments on results contains restrictions based on the amount of certificate allowance. The attached table is a list of the Schools, distinguishing old and new, and giving the amount of instruction afforded by them during 1861 and 1862. These results for the purposes of this report may best be classed under four heads,—

- 1st. Masters, Chief Mates, Only Mates, and Second Mates.
- 2nd. Seamen and Apprentices.
- 3rd. Boys going to Sea.
- 4th. Others such as Mechanics, etc.

Simply taking the figures in this table, the system would appear very economical on the face of it, the results being large in comparison with the expenditure. Thus in 1862 there were 1214 of the first class and 987 of the second class under instruction, of whom 848 were successful at the Board of Trade

examinations ; of the third class, or boys, there were 735 under instruction, of whom 169 went to sea, besides 219 mechanics and others who attended the schools. The total payments to the schools was 2088*l.* It is necessary however to analyze these results carefully in order to appreciate correctly not only their amount but also their quality as the justification for the aid. The instruction that is given to the first class, viz., Masters, Mates, etc., is almost, if not entirely, confined to the "cram" required to pass the examination of the Board of Trade for a certificate under the Merchant Shipping Act. The standard of requirements fixed for these examinations is merely an empirical or rule of thumb knowledge of certain practical rules as far as Navigation and Nautical Astronomy are concerned,—I am not now speaking of the examination in practical seamanship which is not taught in the Schools. The only partial exception, as far as I know, to the empirical nature of the knowledge required being for the Masters "extra certificate," and these are but rarely taken. In this division of the instruction the Teachers receiving Government aid are simply competing with the ordinary crammers at the different ports. The class of men again are not such as public aid is usually granted for. Their circumstances are much above those of the industrial classes for whose instruction payments are made under the Science Directory.

On the other hand it may be urged with considerable force that these Masters, Mates, and others, pay large fees for examination and registration amounting to a considerable sum per annum, and that they have therefore a claim on the country for assistance in instruction. Nor do I think it any bar to this claim that most if not all of this amount is spent in supporting the staff of examiners, etc. These can scarcely be considered as for the benefit of the Masters and Mates, but for the protection of, and therefore to be paid for by, the public.

The same objection—that their circumstances are such as not to require State aid—does not apply to the class of Seamen and Apprentices who form the second large class in the table of results. But the instruction given them is as a rule either of that practical and rather meagre description required for the Board of Trade examination, or it is, as in the case of apprentices in the evening classes, of a very elementary nature such as it is scarcely within the province of this Department to communicate.

I believe that when Navigation Schools were established it was hoped they would give some grounding in the principles and theory of the subjects, something more than the mere cram and

RETURN OF THE WORK DONE IN THE NAVIGATION SCHOOLS. 1861 & 1862.

School.	No. of Masters, Chief Mates, and 2nd Mates,		No. of Seamen and Apprentices,		Boys under instruction, No. gone to sea in ( )		Mechanics under instruction.		Amount of aid received from the Science and Art Department.	
	1861		1862		1861		1862		1861	
	£	s.	£	s.	£	s.	£	s.	£	s.
Aberdeen - - -	144	189	62	48	57	—	—	—	70	0
Belfast* - - -	32	7	19	16	10	—	5	(3)	185	0
Carrickfergus* - - -	—	—	1	3	—	—	5	(23)	0	0
Dublin - - -	—	—	7	3	20	6	8	(2)	0	0
Glasgow - - -	66	103	60	20	66	—	1	(0)	0	0
Greenock* - - -	—	—	20	—	15	12	16	(14)	0	0
Hull - - -	—	—	—	—	—	—	161	(10)	70	0
Leith - - -	—	—	72	119	73	87	84	—	4	0
Liverpool - - -	319	292	380	347	287	—	—	—	228	19
Well-street - - -	—	—	67	189	188	98	—	—	20	11
Poplar - - -	—	—	57	—	—	—	—	—	29	—
Shadwell - - -	—	—	+123	32	26	36	106	—	—	255
Newcastle-on-Tyne -	37	40	130	110	41	—	52	(4)	100	0
Sunderland - - -	48	39	8	11	22	—	80	(5)	0	0
Waterford - - -	183	187	32	47	115	—	141	(69)	223	0
Great Yarmouth - -	8	12	18	10	5	—	18	(8)	0	0
Totals	1106	1214	1055	987	848	—	688	(137)	135	219
							735	(169)	219	1920
									1	2088
									3	6

\* These Schools are under the Interpretation Minute.

†60 of these were Midshipmen.

‡63 of these were Midshipmen.

Boy 13

rule of thumb instruction afforded by the ordinary teachers at the ports. This object under the present system they have failed almost entirely in effecting.

In proposing a revision of the system of aid then I have considered it most advisable to make the instruction of Masters and Mates an entirely secondary and incidental action of the Schools, while their just claims receive due consideration. At present highly qualified teachers with large certificate allowances are provided by the Science and Art Department for the instruction of Masters, Mates, and Seamen, to pass the Board of Trade examinations, under the expectation that they will avail themselves of the opportunity to obtain a somewhat more sound instruction than from the ordinary teachers. If, instead, the teachers are compelled to turn their attention to sound instruction in Mathematics, and the Theory and Science of Navigation, Steam, etc., by these being considered the prime objects of the School and the only results to be paid for, they will be secured; while the preparation for the Board of Trade examination will not be neglected.

As the Merchant Shipping Act entailed certain examinations on all Masters and Mates, the machinery for supplying the instruction, as might be expected, was soon found in sufficient abundance and paid for by them. For the Science and Art Department to step in and provide teachers in a few places is only interfering with private speculation and rendering it uncertain. Such interference is sure to be injurious unless the Department is prepared to take the instruction wholly under its control. And the instruction is really of such a technical nature amounting in fact to teaching a trade, that although the State may demand this knowledge it cannot be considered its function to provide it. But sound scientific instruction, in subjects having the same relation to a seafaring life that the Sciences mentioned in the Science Directory have to the other industries of the country, it is evidently a duty of this Department to aid in affording. Such an action while it secures that which is of great service to the country in general does not interfere with anything that private enterprise will compass. The results are too remote to afford the necessary stimulus. At the same time the staff provided to give sound scientific instruction will incidentally aid the Masters and Mates in securing the instruction to pass the Board of Trade examination at a cheap rate, while their fees will go towards supporting the teachers and leave them not wholly dependent on the payments from the Department.

The instruction of boys destined for the sea in a sound knowledge of Mathematics, Navigation, Nautical Astronomy, and the Use of Instruments, is undoubtedly the most advantageous and best action of the Schools. Unfortunately, as will be seen, the class of boys is very small, and but a small proportion go to sea. In fact a large proportion have no intention of adopting a seafaring life. Much of the instruction is simply elementary —reading, writing, and so on. For the Science and Art Department to pay for such instruction, which should be obtained at a regular elementary school, cannot be justified; and this applies equally to the elementary instruction given to Apprentices and Seamen in the evening which might be given in the Night Schools or third attendances of the elementary Day Schools. Under the present system of aid it is almost impossible to avoid some payment for elementary instruction, the pupils—apprentices, and boys—not being sufficiently advanced to take up the higher subjects I have mentioned. But on a system of payments on the results of instruction in these subjects this difficulty will be obviated; and the elementary instruction, if given, will be at the cost of the supporters of the School, not of this Department. This system would also obviate the difficulties arising from the number of persons under the head of artisans, and others, who attend and receive principally elementary instruction.

I would therefore recommend the following system of aid to the instruction of all such as have adopted, or propose to adopt, a seafaring life in the science of the subjects special to their calling. This system is, as far as administration is concerned, only a slight modification of the general Science system in some particulars which are necessary to meet the case. And in proposing a system of aid in subjects special to Navigation, I would beg leave to recommend that it be extended to *all* who may be engaged in, or who may bona fide propose to engage in,\* a sea-faring life without any restriction as to class, as in the general Science instruction. For the marine is a distinct class which it would be difficult to subdivide. It has in this country always been considered an exceptional class for reasons on which it is unnecessary for me here to enter. It has also for reasons before given a certain exceptional claim.

#### OUTLINE OF A SYSTEM OF AID TO NAVIGATION INSTRUCTION.

Payments to be made on the results of instruction in the following subjects to certificated teachers.

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\*To render this more secure the payment should not be made to the Teacher till the pupil was proved to have gone to sea.

1. Mathematics, including such portions of Algebra, Geometry, Mensuration, Plane and Spherical Trigonometry, and Logarithms, as are necessary for understanding 2 & 3.
2. General Navigation.
3. Nautical Astronomy.
4. Physical Geography.
5. Steam.

Examinations to be held (1) for adults, seamen, and others, at the sea-port towns where local Marine Boards are formed, four times a year ; (2) for youths, etc., in inland towns once a year, as a continuation of the regular May examination of the Department, or at Christmas if found more convenient.

The successful candidates to be classed as passed, honourable mention, third, second and first grade certificates. In the three last cases a certificate to be given to that effect, which may, if second or third grade, be improved at any future examination. The payments to the teacher to be 1*l.* 2*l.* 3*l.* 4*l.* or 5*l.* according to the grade of result. The condition to be, in the case of a boy, that he has received 40 lessons from the teacher and goes to sea ; and in that of an adult at sea that he has received 20 lessons. The voucher for the attendance of the pupil to be given by the local committee.

The examination for boys, to be held simultaneously all over the kingdom, and superintended by the local committee, the papers being supplied from the Science and Art Department.

The examination for adults, seamen, and others, to be held by the local Marine Boards, the papers being supplied by the Science and Art Department. The Board of Trade will perhaps pay some small fee per examination to the Secretary of the local Marine Board, in the same way as the Secretaries of the Local Committees are paid by this Department. I have proposed the officers in connection with the Board of Trade being employed in part of the work because, in consequence of the short time seamen, masters, and mates, remain at a port, the examinations for them must—to meet the interest of the teachers—recur oftener than a local committee can well be expected to undertake them ; secondly, because from better opportunities of knowing, such a body can give a better guarantee as to the candidates being bona fide sailors ; and thirdly, because the examination being then brought to a certain extent in connection with the regular examinations of the Board of Trade, and being removed from all clique control at the ports, the interests of the shipping trade are more likely to be enlisted in

their favour, the knowledge of their existence more generally and rapidly diffused, and their effect on the regular examinations of the Board of Trade—which I believe there is a general wish if possible to raise in character—rendered more efficacious.

It may perhaps be considered that the amounts of the payments I have suggested are rather high, but I have taken them on that scale because from the migratory habits of their pupils much of a teachers instruction will, as far as these grants are concerned, be thrown away, the pupils leaving before the examination; and because, though from the insufficiency of the data it is impossible to say now what they may amount to, I do not think it will for some years be more than, even if it be as much as, the present grants; while if the teachers are made clearly to understand that the amounts are tentative and experimental, they may be reduced at any time without hardship.

My reasons for proposing to restrict these grants to the seaman class are that the subjects of instruction, which—unlike those of the general Science system—are directed to a particular industry, if I may so call it, are rather special and are to a certain extent parts of, or overlap some of the subjects as laid down in the general Science Directory; and one of them—pure Mathematics—it has not been considered advisable to incorporate in these subjects. At the same time this scheme should for the interests of the Navy be as generally applicable as possible, and may with great advantage be extended to inland towns, where without this restriction it would interfere with the general Science system.

I am, Sir,

Your obedient Servant,

J. F. D. DONNELLY,  
Captain R.E.

Henry Cole, Esq., C.B.,  
Science and Art Department.

Boy 13

RETURN OF THE WORK DONE IN THE NAVIGATION SCHOOLS. 1861 & 1862.

School.	No. of Masters, Chief Mates, only, and 2nd Mates,				No. of Seamen and Apprentices,				Boys under instruction, No. gone to sea in ( )				Mechanics under instruction,				Amount of aid received from the Science and Art Department.			
	1861		1862		1861		1862		1861		1862		1861		1862		1861		1862	
	1861	1862	1861	1862	1861	1862	1861	1862	1861	1862	1861	1862	1861	1862	1861	1862	1861	1862	1861	1862
Aberdeen - - -	144	189	62	48	57	-	5	(3)	-	-	70	0	185	0	0	0	0	0	0	0
Belfast* - - -	32	7	19	16	10	-	5	(5)	5	(23)	15	0	0	0	0	0	0	0	0	0
Carrickfergus*	-	-	1	3	20	6	8	(2)	75	(7)	-	-	-	-	-	-	-	-	-	-
Dublin - - -	-	1	7	3	20	66	-	1	(0)	10	(9)	-	-	-	-	-	-	-	-	-
Glasgow - - -	66	103	60	20	66	-	16	(14)	19	(15)	-	-	-	-	-	-	-	-	-	-
Greenock*	-	-	20	-	15	12	-	-	161	(10)	203	(16)	-	-	35	-	228	19	11	255
Hull - - -	-	-	-	-	-	-	-	-	11	(4)	34	(8)	29	20	-	-	100	0	0	165
Leith - - -	-	-	72	119	73	87	84	-	-	-	-	-	-	-	-	-	223	0	0	223
Liverpool - - -	319	292	380	347	287	-	-	-	-	-	-	-	-	-	-	-	95	0	0	95
Well-street - - -	-	-	57	67	189	188	98	-	-	-	-	-	-	-	-	-	132	10	0	132
Poplar - - -	-	-	+127	123	32	26	36	-	106	6	-	-	-	-	98	-	100	0	0	165
Shadwell - - -	-	-	37	40	130	110	41	-	52	(4)	48	-	-	-	-	-	262	15	4	268
Newcastle-on-Tyne -	48	39	8	11	22	-	80	(5)	64	(3)	-	-	-	-	-	-	207	2	0	200
Sunderland - - -	183	187	32	47	115	-	141	(69)	125	(56)	106	66	256	13	2	239	3	6	239	
Waterford - - -	-	8	12	18	10	5	-	18	(8)	19	(5)	-	-	-	-	-	50	0	0	65
Great Yarmouth -	-	12	9	48	39	9	-	89	(16)	95	(24)	-	-	-	-	-	209	4	8	185
Totals	1106	1214	1055	987	848	-	688	(137)	735	(169)	135	219	1920	5	1	2088	3	6		

\*These Schools are under the Interpretation Minute.

†60 of these were Midshipmen. †63 of these were Midshipmen.

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